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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,329	12/05/2003	Masaki Nakamura	56232.97	1138

7590 05/09/2006

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EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/729,329

Applicant(s)

NAKAMURA ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/9/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### **Specification**

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the present application, the abstract is two paragraphs not one as required.

### **Claim Objections**

2. Claims 2 and 7 are objected to because of the following informalities:

Words appear to be missing in claim 2, line 2 after "portion" and before "to" and in claim 7, line 3, after "pigment" and before "not".

Appropriate correction is required.

### **Claim Rejections - 35 USC § 112**

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 1 and claim 6 each recite the step of mixing hydrophilic colloid with dispersion of pigment particle to form a “hydrophobic site”. The scope of each of the claims is confusing given that it is not clear how hydrophilic colloid would form hydrophobic site on pigment.

Clarification is requested.

(b) Claim 8 recites “composition of the polymer at the position contacting to the surface of the pigment and that at the outermost portion are different from each other”. The scope of the claim is confusing because it is not clear what is meant by “outermost portion” or what types of polymer this encompasses. Does this refer to the portion of the polymer not in contact with the pigment wherein the polymer is a copolymer or core-shell polymer? Clarification is requested.

(c) Claim 10 discloses that the pigment is selected from the group consisting of azo dye, quinacridone dye, and phthalocyanine dye. The scope of the claim is confusing because it is not clear how the pigment is a dye. Clarification is requested.

**Claim Rejections - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 4-13, and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by McCovick (U.S. 2004/0110867).

McCovick discloses method for forming an aqueous dispersion of composite colorant particles, i.e. colored microparticles, comprising pigment covered with polymer wherein the method comprises the steps of mixing dispersant or polymeric protective colloid with dispersion of pigment particles, adding monomer mixture, and adding initiator to form polymer on surface of pigment from the monomer. The pigment includes azo, quinacridone, phthalocyanine, and carbon black pigments. The mean particle size of the composite colorant particles or colorant microparticles is less than 200 nm, preferably less than 80 nm. There is no disclosure of microparticles containing no pigment. It is disclosed that the polymer is obtained from several monomers including hydrophilic monomer and hydrophobic monomer and thus, the composition of the polymer at the position contacting to the surface of the pigment and that at the outermost portion would inherently be different from each other. There is also disclosed ink comprising 1-50% solvent and the aqueous dispersion of colored microparticles wherein the ink possesses viscosity of 1-8 cP and surface tension of 20-60 dyne/cm. There is also disclosed ink jet printing method wherein the ink is ejected from paper onto substrate including porous substrate (paragraphs 2, 17, 20-23, 26 (lines 12, 15-16, 21), 27 (line 16), 28-34, 70-71, 73, 77, 82, 84, 86-87, 103-104, 115, and 117).

Attention is called to ink IM-1 that comprises colored microparticles obtained by mixing compound having hydrophilic portion and hydrophobic portion, i.e. oleoyl methyl taurine dispersant, with dispersion of pigment particles, adding monomer to the mixture, and adding polymerization initiator to form polymer on surface of the pigment from the monomer. The colored microparticle comprises 50% polymer and 50% pigment from which it is calculated that the ratio of polymer to pigment is 1.

Given that McCovick discloses colloid or compound having hydrophilic portion and hydrophobic portion as presently claimed which is mixed with dispersion of pigment as presently claimed, it is clear that the colloid or compound would inherently form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

In light of the above, it is clear that McCovick anticipates the present claims.

7. Claims 1, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Reiss (U.S. 3,714,102).

Reiss discloses method for forming an aqueous dispersion of encapsulated particles, i.e. colored microparticles, comprising pigment covered with polymer wherein the method comprises the steps of mixing hydrophilic protective colloid with dispersion of pigment particles, adding monomer mixture, and adding initiator to form polymer on surface of pigment from the monomer. The ratio of polymer to pigment is 0.5-1 by volume. There is no disclosure of microparticles containing no pigment. It is disclosed that the polymer is obtained from several monomers including hydrophilic monomer and hydrophobic monomer and thus, the composition of the polymer at the position contacting to the surface of the pigment and that at the outermost

portion would inherently be different from each other (col.1, lines13-15 and 24-31, col.2, lines 27-64, col.4, line 29-53, col.5, lines 18-25 and 51-70, col.6, lines 32-38, and example 6). It is noted that Reiss disclosed ratio of polymer to pigment by volume while present claims require ratio of polymer to pigment by weight. However, given that the ratio of Reiss overlaps that presently claimed and given the broad ratio presently claimed, it is clear, absent evidence to the contrary, that the ratio of Reiss inherently overlaps the ratio presently claimed.

Given that Reiss discloses hydrophilic colloid as presently claimed which is mixed with dispersion of pigment as presently claimed, it is clear that the colloid would inherently form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

In light of the above, it is clear that Reiss anticipates that presently claimed.

8. Claims 1-2 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyabayashi (U.S. 2004/0229974).

Miyabayashi discloses method for forming aqueous dispersion of microencapsulated pigment, i.e. colored microparticles, comprising pigment covered with polymer wherein the method comprises mixing cationically polymerizable surface active agent, i.e. compound having hydrophilic portion and hydrophobic portion, with dispersion of pigment, adding hydrophilic monomer and hydrophobic monomer, and adding initiator to form the polymer on a surface of the pigment from the monomer. The pigment includes azo, quinacridone, phthalocyanine, and carbon black pigments (paragraphs 59-60, 70-78, 140-141, 169, 200, 238-239, 265, 285, 292-295, 313-314, 319, 364, and 396).

Given that Miyabayashi discloses compound having hydrophilic portion and hydrophobic portion as presently claimed which is mixed with dispersion of pigment as presently claimed, it is clear that the compound would inherently form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

In light of the above, it is clear that Miyabayashi anticipates the present claims.

9. Claims 1, 4-8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin (U.S. 4,608,401).

Martin discloses method for forming an aqueous dispersion of colored microparticles comprising pigment covered with polymer wherein the method comprises the steps of mixing hydrophilic protective colloid with dispersion of pigment particles, adding monomer mixture, and adding initiator to form polymer on surface of pigment from the monomer. The pigment includes azo, phthalocyanine, and carbon black pigments. The ratio of polymer to pigment is 0.1-10. There is no disclosure of microparticles containing no pigment. It is disclosed that the polymer is obtained from several monomers including hydrophilic monomer and hydrophobic monomer and thus, the composition of the polymer at the position contacting to the surface of the pigment and that at the outermost portion would inherently be different from each other (col.1, lines 13-19, col.5, lines 6-19, col.6, lines 39-48 and 66-68, col.9, lines 47-50, col.10, lines 48-54, col.11, lines 67-68, col.13, lines 58-64, col.17, lines 55-68, and example 2).

Given that Martin discloses compound having hydrophilic portion and hydrophobic portion as presently claimed which is mixed with dispersion of pigment as presently claimed, it



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is clear that the compound would inherently form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

In light of the above, it is clear that Martin anticipates the present claims.

**Claim Rejections - 35 USC § 103**

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi (U.S. 2004/0229974) in view of WO 01/96483.

The disclosure with respect to Miyabayashi in paragraph 8 above is incorporated here by reference.

The difference between Miyabayashi and the present claimed invention is the requirement in the claims of the ratio of polymer to pigment in the colored microparticles.

WO 01/96483<sup>1</sup> discloses pigment enveloped, i.e. encapsulated, in polymer comprising at least 10% polymer and 0.5-30% pigment from which it is calculated that the ratio of polymer to pigment is at least 0.3-20. The motivation for using such amount polymer is to produce ink with good recovery from nozzle clogging and good transparency while the motivation for using such amount of pigment is to produce ink with good print density and good ejection stability from printer (paragraphs 146-147).

In light of the motivation for using specific amount of polymer and pigment in the colored microparticles disclosed by WO 01/96483 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such amount of polymer and pigment and

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<sup>1</sup> It is noted that when utilizing WO 01/96483, the disclosures of the reference are based on Yatake et al. (U.S. 2003/0106462) which is an English language equivalent of the reference. Therefore, the column and line numbers cited with respect to WO 01/96483 are found in Yatake et al.

thus, ratio of polymer to pigment, in the colored microparticles of Miyabayashi in order to produce ink with good recovery from nozzle clogging and good transparency, print density and ejection stability, and thereby arrive at the claimed invention.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCovick (U.S. 2004/0110867) in view of Elwakil (U.S. 5,833,743)

The disclosure with respect to McCovick in paragraph 6 above is incorporated here by reference.

The difference between McCovick and the present claimed invention is the requirement in the claims of the pH of the ink.

McCovick is silent with respect to the pH of the ink.

Elwakil, which is drawn to ink jet ink, disclose using ink with pH of 7-9 in order to minimize corrosion of the printer (col.5, lines 8-19).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use ink with pH of 7-9 in McCovick in order to prevent ink from corroding printer, and thereby arrive at the claimed invention.

13. Claims 6-12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi (U.S. 2004/0229974) in view of WO 01/96483.

Miyabayashi discloses method for forming aqueous dispersion of microencapsulated pigment, i.e. colored microparticles, comprising pigment covered with polymer wherein the method comprises mixing cationically polymerizable surface active agent, i.e. compound having

hydrophilic portion and hydrophobic portion, with dispersion of pigment, adding hydrophilic monomer and hydrophobic monomer, and adding initiator to form the polymer on a surface of the pigment from the monomer. The pigment includes azo, quinacridone, phthalocyanine, and carbon black pigments. The volume average particle size of the microencapsulated pigment or colorant microparticles is 2-200 nm. There is no disclosure of microparticles containing no pigment. It is disclosed that the polymer is obtained from hydrophilic monomer and hydrophobic monomer and thus, the composition of the polymer at the position contacting to the surface of the pigment and that at the outermost portion would inherently be different from each other. There is also disclosed ink comprising 10-50% solvent and the aqueous dispersion of colored microparticles wherein the ink possesses pH of 7-9. There is also disclosed ink jet printing method wherein the ink is ejected from paper onto substrate including porous substrate, i.e. paper. Attention is called to Table 12 which discloses ink comprising colored microparticles wherein the ink possesses viscosity of approximately 3 mPas (paragraphs 59-60, 70-78, 140-141, 169, 200, 238-239, 265, 285, 292-295, 313-314, 319, 364, 396, and 422).

Given that Miyabayashi discloses compound having hydrophilic portion and hydrophobic portion as presently claimed which is mixed with dispersion of pigment as presently claimed, it is clear that the compound would intrinsically form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

The difference between Miyabayashi and the present claimed invention is the requirement in the claims of the ratio of polymer to pigment in the colored microparticles.

WO 01/96483 discloses pigment enveloped, i.e. encapsulated, in polymer comprising at least 10% polymer and 0.5-30% pigment from which it is calculated that the ratio of polymer to

pigment is at least 0.3-20. The motivation for using such amount polymer is to produce ink with good recovery from nozzle clogging and good transparency while the motivation for using such amount of pigment is to produce ink with good print density and good ejection stability from printer (paragraphs 146-147).

In light of the motivation for using specific amount of polymer and pigment in the colored microparticles disclosed by WO 01/96483 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such amount of polymer and pigment and thus, ratio of polymer to pigment, in the colored microparticles of Miyabayashi in order to produce ink with good recovery from nozzle clogging and good transparency, print density and ejection stability, and thereby arrive at the claimed invention.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi in view of WO 01/96483 as applied to claims 6-12 and 14-17 above, and further in view of Ma et al. (U.S. 5,648,405).

The difference between Miyabayashi in view of WO 01/96483 and the present claimed invention is the requirement in the claims of the surface tension of the ink.

Miyabayashi is silent with respect to the surface tension.

Ma et al., which is drawn to ink jet ink, disclose using ink with surface tension of 20-70 dyne/cm in order to produce ink with proper jet velocity, separating length of droplets, drop size, and stream stability so that the ink is suitable for use in ink jet printing (col.5, lines 39-51).

In light of the motivation for using ink with specific surface tension disclosed by Ma et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to

use ink with such surface tension in Miyabayashi in order to that ink can be effectively used in ink jet printing, and thereby arrive at the claimed invention.

15. Claims 1, 3-7, 9-13, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-012802.

JP 2002-012802, an English Translation which included in this office action, discloses method for forming an aqueous dispersion of colored microparticles comprising pigment covered with polymer wherein the method comprises mixing hydrophilic colloid with a dispersion of the pigment, adding monomer to form core polymer, adding polymerization initiator to form the polymer on the surface of the pigment from the monomer, adding monomer to form shell polymer, and adding polymerization initiator to form shell polymer on the surface of the polymer on the pigment. From the examples, it is seen that the pigment is in fact mixed with polyvinyl alcohol, i.e. hydrophilic colloid. The pigment includes azo, phthalocyanine, and carbon black pigments. The volume average particle size of the colored microparticles is 50-600 nm. It is disclosed that the colored microparticles comprise 1-50% pigment. Thus, it is calculated that the ratio of weight of polymer, i.e. 50-99%, to weight of pigment, i.e. 1-50%, is 1-99. There is no disclosure of microparticles containing no pigment. There is also disclosed ink comprising 1-40% solvent and the aqueous dispersion of colored microparticles wherein the ink possesses viscosity of 8 mPas or less and surface tension of 45 dyne/cm or less. There is also disclosed ink jet printing method wherein the ink is ejected from paper onto substrate including porous substrate, i.e. paper (paragraphs 16-18, 21, 25-27, 29, 31-32, 34-37, 39, 41, and 51). Given that JP 2002-012802 discloses compound having hydrophilic portion and hydrophobic portion as

presently claimed which is mixed with dispersion of pigment as presently claimed, it is clear that the compound would intrinsically form a hydrophobic site which is capable of absorbing a monomer compound on a surface of the pigment as presently claimed.

While JP 2002-012802 fails to exemplify the presently claimed process and colored microparticles nor can the claimed process and colored microparticles be “clearly envisaged” from JP 2002-012802 as required to meet the standard of anticipation (cf. MPEP 2131.03), nevertheless, in light of the overlap between the process and colored microparticles and the process disclosed by JP 2002-012802, it is urged that it would have been within the bounds of routine experimentation, as well as the skill level of one of ordinary skill in the art, to use process and colored microparticles which are both disclosed by JP 2002-012802 and encompassed within the scope of the present claims and thereby arrive at the claimed invention.

16. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-012802 as applied to claims 1, 3-7, 9-13, and 15-17 above, and further in view of Elwakil (U.S. 5,833,743)

The difference between JP 2002-012802 and the present claimed invention is the requirement in the claims of the pH of the ink.

JP 2002-012802 is silent with respect to the pH of the ink.

Elwakil, which is drawn to ink jet ink, disclose using ink with pH of 7-9 in order to minimize corrosion of the printer (col.5, lines 8-19).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use ink with pH of 7-9 in JP 2002-012802 in order to prevent ink from corroding printer, and thereby arrive at the claimed invention.

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuribayashi et al. (U.S. 6,921,433) discloses aqueous dispersion containing pigment-containing particles.

Kito et al. (U.S. 6,498,203) discloses ink comprising particulate adhesive colored resin.

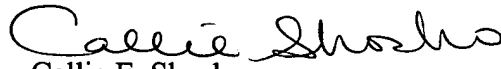
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
5/5/06